

I/WE Claim:

1. A sensor system for measuring an electric potential signal of interest generated by an object comprising:
  - a first signal sensor including:
    - a local ground connection, an input and an output;
    - processing circuitry including an input connected to said output of the first signal sensor and the local ground connection;
  - a ground sensor including:
    - a first ground electrode;
    - a second ground electrode,

whereby a voltage of the local ground connection of the first signal sensor is forced to be substantially the same as a voltage presented by the object at said ground sensor so as to reduce an effect of a change in static potential on the signal of interest.
2. The sensor system according to claim 1, wherein said first signal sensor further includes:
  - a capacitive-type electrode; and
  - an amplifier with a DC supply, wherein the input is connected to the capacitive-type electrode.
3. The sensor system according to claim 1, further comprising:
  - a second signal sensor including an input and an output;
  - a differential amplifier including a first input connected to the output of said first signal sensor, a second input connected to the output of said second signal sensor and an amp output providing the signal of interest which is proportional to the difference between a signal from the first signal sensor and a signal from the second signal sensor.

4. The sensor system according to claim 3, wherein said second signal sensor further includes:

a capacitive-type electrode; and

an amplifier with a DC supply, wherein the input of the second signal sensor is connected to the capacitive-type electrode.

5. The sensor system according to claim 1, wherein said ground sensor further includes:

a high impedance amplifier with a DC supply, a ground connection connected to both said first ground electrode and a universal ground, an input connected to said second ground electrode and an output connected to the local ground connection of said first signal sensor.

6. The sensor system according to claim 5, further comprising:

a capacitor electrically disposed between the electrode and the high impedance amplifier.

7. The sensor system according to claim 1 wherein the first signal sensor constitutes a capacitive sensor such that, during use of the sensor system, the first signal sensor is entirely spaced from the object.

8. The sensor system according to claim 2, further comprising: a feedback network electrically connected to the first signal sensor.

9. The sensor system according to claim 8, wherein said feedback network includes an amplifier and a series capacitor, and wherein a gain of the amplifier of the feedback network is set to 1 plus an input capacitance of the amplifier of the first signal sensor divided by a value of the series capacitor of the feedback network.

10. A sensor system for measuring an electric potential signal of interest generated by an object comprising:  
first signal sensor means including:  
a local ground connection, an input and an output;  
processing circuitry including an input connected to said output of the first signal sensor means and the local ground connection;  
ground sensor means including:  
a first ground electrode;  
a second ground electrode; and  
means causing a voltage present at the local ground connection of the first signal sensor to be substantially the same as a voltage present at said second ground electrode so as to reduce an effect of a change in static potential on the signal of interest.

11. The sensor system according to claim 10, wherein said first signal sensor means further includes:  
a capacitive-type electrode; and  
an amplifier with a DC supply, wherein the input is connected to the capacitive-type electrode.

12. The sensor system according to claim 10, further comprising:  
second signal sensor means including an input and an output; and  
differential amplifier means including a first input connected to the output of said first signal sensor means, a second input connected to the output of said second signal sensor means and an amp output providing the signal of interest which is proportional to the difference between a signal from the first signal sensor means and a signal from the second signal sensor means.

13. The sensor system according to claim 12, wherein said second signal sensor means further includes:
- a capacitive-type electrode; and
  - an amplifier with a DC supply, wherein the input of the second signal sensor means is connected to the capacitive-type electrode.
14. The sensor system according to claim 10, wherein said ground sensor means further includes:
- high impedance amplifier means with a DC supply, a ground connection connected to both said first ground electrode and a universal ground, an input connected to said second ground electrode and an output connected to both the local ground connection of said first signal sensor means and said second ground electrode.
15. The sensor system according to claim 14, further comprising:
- a capacitor electrical disposed between the electrode and the high impedance amplifier means.
16. The sensor system according to claim 10 wherein, during use of the sensor system, the first signal sensor means is entirely spaced from the object.
17. The sensor system according to claim 11, further comprising:
- feedback network means electrically connected to the first signal sensor means.
18. The sensor system according to claim 17, wherein said feedback network means includes an amplifier and a series capacitor, and wherein a gain of the amplifier of the feedback network is set to 1 plus the input

capacitance of the amplifier of the first signal sensor means divided by a value of the series capacitor of the feedback network means.

19. A method of measuring an electric potential signal of interest generated by an object comprising:

sensing the electric potential signal through a capacitive-type sensor including a local ground connection, an input and an output;

sensing a ground signal through a ground sensor having first and second ground electrodes; and

reducing an effect of a change in a potential on the signal of interest by causing a voltage present at the local ground connection of the capacitive-type sensor to be substantially the same as a voltage present at said second ground electrode.

20. The method of claim 19, further comprising:

providing a feedback signal from a feedback network, including an amplifier and a series capacitor, electrically connected to the capacitive-type sensor, with a gain of the amplifier of the feedback network being set to 1 plus an input capacitance of an amplifier of the capacitive-type sensor divided by a value of the series capacitor of the feedback network.